Tennessee Comprehensive Assessment Program

Item Sampler

Grade 8

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Introduction

What is the TCAP Achievement Test?

The TCAP Achievement Test is a multiple-choice test designed to measure student achievement in certain skills in five subject areas: Reading, Language Arts, Mathematics, Science, and Social Studies. The sample questions in this On-Line Item Sampler are representative of the item types and item formats that will be used in the actual test, including those questions with art and without art.

What are the questions testing?

Questions are written to test student performance in State and national content areas. The State Content Standards and Performance Indicators were developed by the Tennessee Department of Education.
These Standards and Performance Indicators are listed on the State Department of Education Web site at http://www.state.tn.us/education/ci/cistandards.htm

Who will be tested?

All students in grades three through eight will be tested.

How long will the tests take?

The length of the tests will vary, depending on the grade level. The time limits are generous and allow most students time to finish. Extended time limits apply for students using accommodations.

How do I use the sample questions?

These questions provide information for students, parents, and teachers about the TCAP Achievement Test. The questions in the On-Line Item Sampler are representative of most of the question types that will be on the TCAP Achievement Test.

These questions can be used as a classroom learning session or as an individual, short practice test to prepare students for the actual test. Item types with and without art are presented to better familiarize students with the actual test format.

An answer key for the sample questions is provided at the end of this On-Line Item Sampler.

How will the tests be scored?

The test answers will be machine scored. Results from the test provide information about how well students performed on the content being tested.

May calculators be used?

A calculator may be used for test items that do not measure the academic skill of computation, e.g., applied concepts and algebraic problems. Calculators may be used on most TCAP Achievement Mathematics Subtests. Calculators **may not** be used on any part of the K–2 test.

Which test accommodations may be used?

The Achievement Test may be administered using various procedures (or accommodations) that are used during the student's daily educational program. Certain conditions must be met for students to be eligible for Special and English Language Learner Accommodations.

What are some tips for preparing students for the test?

Remind students to

Relax: It is normal to be somewhat anxious before the test. Remember that the score is only one of a number of measures of performance.

Listen: Listen to and read the test directions carefully.

Plan Use of Time: First, answer all the questions you are sure about. Do not spend too much time on any one question. If a question seems to take too long, skip it and return to it later if you have extra time.

Pause and Think: If you are not sure how to answer a question, carefully read it again. Rule out answer choices that you know are incorrect and then choose from those that remain.

Directions **Read the passage. Then answer Numbers 1 through 5.**

Amazing Grace

by Kathiann Kowalski

The hands on the clock in Grace Murray Hopper's office swept counterclockwise. The backwards clock showed that things did not always have to be done the same way. Thinking like that helped Grace become a pioneer in computer science.

Grace was born in New York in 1906. At a time when few women went to college, Grace had a different idea. She earned advanced mathematics degrees from Yale University. Later Grace taught at Vassar College.

In 1943, Grace joined the U.S. Naval Reserve. Grace programmed the Navy's Mark I computer. The Mark I was 51 feet long, 8 feet high, and 8 feet wide. Unlike today's superfast supercomputers, the Mark I did only 3 additions per second.

Thinking differently solved problems. One day in 1945, a Navy computer shut down. Grace and her co-workers found the first computer "bug." A moth had gotten stuck in the machine. Today we still call computer problems "bugs."

Trying new things made computer work simpler. During computers' early years, scientists first wrote out computer instructions. Then they coded programs into numbers. Grace and her co-workers did not always want to do that boring job. Together they invented the compiler. It automatically puts programs into machine number code.

After World War II, Grace stayed in the Naval Reserve. Grace worked with businesses, too. She helped develop UNIVAC, the first big business computer. Grace felt computers could help businesses a lot. She encouraged companies to try new ideas.

Businesses needed a better programming language. Grace's work formed the basis for COBOL. COBOL stands for "Common-Business-Oriented-Language." Many businesses still use COBOL.

Grace wanted other people to think differently, too. Large organizations like the Navy have many rules. Grace did not want these rules to hinder creativity. "It's always easier to ask forgiveness than it is to get permission," she said. Grace hated it when people said, "We've always done it this way." For Grace, there was always more than one way to do something.

Grace taught about computers in different ways. Grace did not just say "nanosecond" when talking about computer speed. She showed a piece of wire just under a foot long. That is how far light travels in one billionth of a second.

Thinking differently earned Grace many promotions and awards. In 1985, Grace became a Rear Admiral in the Navy. But Grace felt her best reward was working with young people. "Our young people are the future," Grace said when she retired from the Navy in 1986.

"Amazing Grace" Murray Hopper died in 1992 at age 85. Five years later, the Navy named a high-tech ship after Grace. The ship is a tribute to Grace's creative thinking.

Remember Grace when you go online. Remember her too when you visit a bank, shop at a store, or check out a library book. Computers make all those businesses work better. Remember to think differently, too. Don't ever say, "We've always done it this way." There's always more than one way to do something.

Reporting Category: **1 Content**

Performance Indicator: **8.1.spi.11 Determine an author's purpose for writing or a student's purpose for reading.**

1 The author's main purpose in writing this passage is to

A inform readers of the history of computers
B discuss the benefits of computers for businesses
C tell the readers about a pioneer in computer science
D persuade young people to create their own computer programs

Reporting Category: **2 Meaning**

Performance Indicator: **8.1.spi.6 Determine cause-effect relationships in context.**

2 What effect did the moth that was stuck in the Navy computer have on the computer world?

F Computer speed was increased.
G Computer problems came to be known as "bugs."
H A new computer language called "COBOL" was created.
J New research was done to make the computer work simpler.

Reporting Category: **3 Vocabulary**

Performance Indicator: **8.1.spi.10 Recognize and use grade appropriate and/or content specific vocabulary.**

3 Read this sentence from the passage.

Grace did not want these rules to hinder creativity.

Which of these is the best meaning for *hinder?*

A forget
B prevent
C develop
D emphasize

Reporting Category: **5 Writing/Process**

Performance Indicator: **8.2.spi.4 Identify the targeted audience for a selected passage.**

4 This passage was most likely written for

F college professors
G computer scientists
H the general public
J the military community

Reporting Category: **7 Techniques and Skills**

Performance Indicator: **8.2.spi.12 Identify individual written selections as technical, narrative, persuasive, and/or descriptive in mode.**

5 This passage is an example of what kind of writing?

A technical
B narrative
C persuasive
D descriptive

Reporting Category: **4 Writing/Organization**

Performance Indicator: **8.2.spi.2 Select appropriate time-order or transitional words/phrases to enhance the flow of a writing sample.**

6 Read the sentences.

The trip to the supermarket is short in distance. The trip to the supermarket takes twenty minutes due to all of the stoplights.

What is the best way to combine the two sentences?

F Because it is short in distance, the trip to the supermarket takes twenty minutes due to all of the stoplights.

G Regardless of all of the stoplights, the trip to the supermarket is short in distance, and takes twenty minutes.

H The trip to the supermarket, though short in distance, takes twenty minutes due to all of the stoplights.

J Due to all of the stoplights, the trip, a short distance to the supermarket, takes twenty minutes.

Reporting Category: **6 Grammar/Conventions**

Performance Indicator: **8.3.spi.8 Select the appropriate use of underlining/italicizing with titles, specific words, numbers, letters, and figures.**

7 Which sentence is written correctly?

A **Romeo and Juliet** is William Shakespeare's most romantic play.

B Romeo and Juliet is William Shakespeare's most romantic play.

C ROMEO AND JULIET is William Shakespeare's most romantic play.

D "Romeo and Juliet" is William Shakespeare's most romantic play.

Mathematics

Reporting Category: **1 Number and Operations**

Performance Indicator: **8.1.spi.2 Compare rational numbers using the appropriate symbol (<, >, =).**

1 Which statement is true?

A $\frac{1}{13} < 0.13$

B $\frac{1}{13} > 0.13$

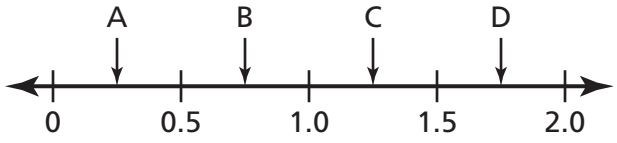
C $\frac{1}{13} = 0.13$

D $\frac{1}{13}$ cannot be compared to 0.13

Reporting Category: **1 Number and Operations**

Performance Indicator: **8.1.spi.4 Determine the approximate locations of rational numbers on a number line.**

2 Which is the best estimate for the location of 1.75 on the number line?



F Arrow A

G Arrow B

H Arrow C

J Arrow D

Reporting Category: 2 Algebraic Thinking

Performance Indicator: **8.2.spi.3 Represent situations and solve real-world problems using symbolic algebra.**

3 Mr. Smith's car travels 36 miles per gallon of gas. He has g gallons of gas in his car. Which equation represents the distance (d) he can drive?

A $d = 36g$

B $d = \frac{g}{36}$

C $d = \frac{36}{g}$

D $d = 36 + g$

Reporting Category: 2 Algebraic Thinking

Performance Indicator: **8.2.spi.7 Apply given formulas to solve real-world problems.**

4 Use the formula to find the volume (V) of the can.

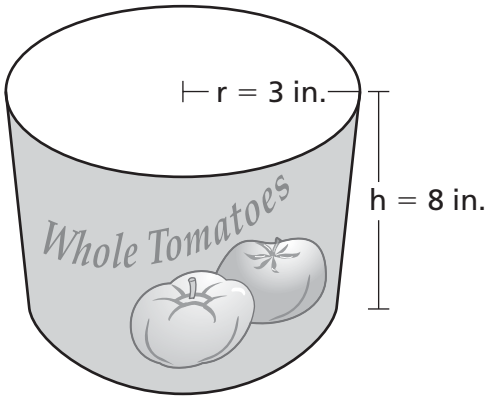
F 17π in^3

G 48π in^3

H 72π in^3

J 328π in^3

$V = \pi r^2 h$

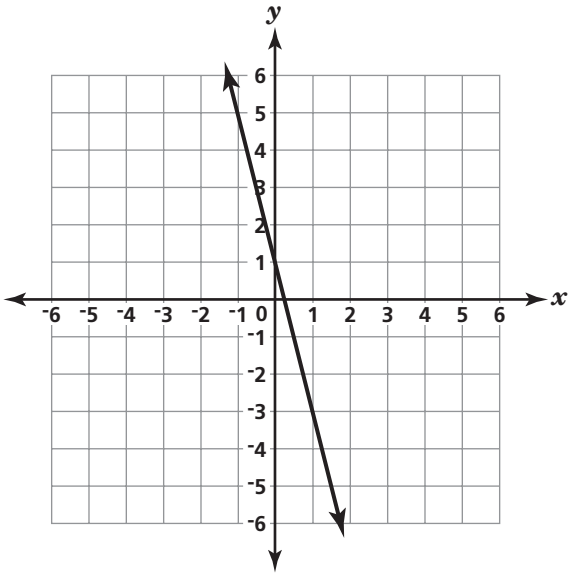


Note: The figure is not drawn to scale.

Reporting Category: 3 Graphs and Graphing

Performance Indicator: 8.2.spi.4 Connect symbolic expressions and graphs of lines.

5 Which equation represents this line?



A $y = \frac{1}{4}x + 1$

B $y = \frac{-1}{4}x + 1$

C $y = 4x + 1$

D $y = -4x + 1$

Reporting Category: 4 Real World Problem Solving

Performance Indicator: 8.4.spi.5 Solve real-world problems involving rate/time/distance (i.e., $d = rt$).

6 Don ran 3 miles in 24 minutes. How fast did he run?

F $\frac{1}{21}$ mile per minute

G $\frac{1}{8}$ mile per minute

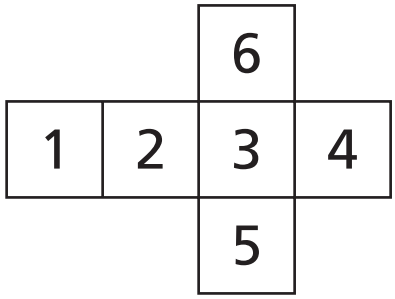
H 3 miles per minute

J 8 miles per minute

Reporting Category: 4 Real World Problem Solving

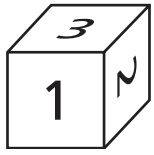
Performance Indicator: 8.3.spi.7 Apply spatial reasoning and visualization to solve real-world problems.

7 Sean folds the pattern shown below into a cube.

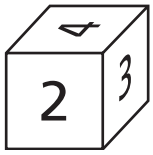


Which is Sean's cube?

A



C



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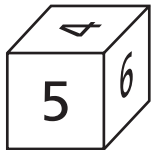

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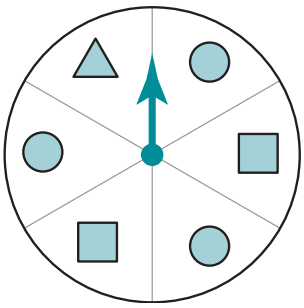
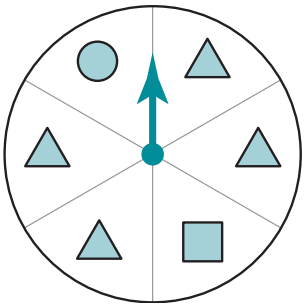
Reporting Category: 5 Data Analysis and Probability

Performance Indicator: 8.5.spi.6 Connect the symbolic representation of a probability to an experiment.

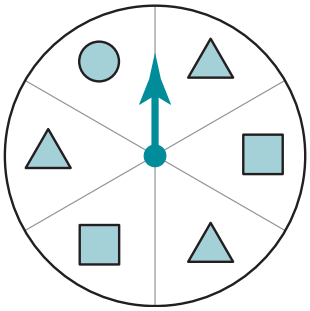
8 On which wheel is the probability of getting a $\frac{1}{3}$?



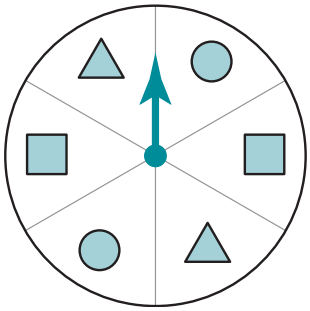
F



H



G



J

Reporting Category: **5 Data Analysis and Probability**

Performance Indicator: **8.5.spi.7 Determine the median of a given set of real-world data (even number of data).**

9 Jan is a long-distance runner. Below are the distances of some of her practice runs, in miles.

6.8, 8.7, 7.9, 8.1, 3.4, 7.1

What is the median distance of Jan's practice runs?

A 7.0
B 7.5
C 7.9
D 8.0

Reporting Category: **6 Measurement**

Performance Indicator: **8.4.spi.6 Apply formulas to find the circumference and area of circles.**

10 The world's largest skateboard has wheels that are 2.5 feet in diameter. What is the approximate circumference of each wheel?

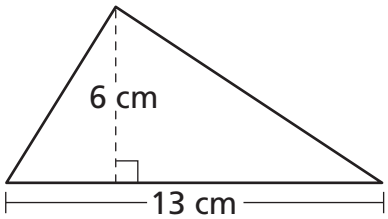
F 7.5 feet
G 7.85 feet
H 15.7 feet
J 31.4 feet

$C = \pi d$
$\pi = 3.14$

Reporting Category: **6 Measurement**

Performance Indicator: **8.4.spi.4 Apply formulas to find the area of triangles, parallelograms, and trapezoids.**

11 Use the formula $A = \frac{1}{2} \times \text{base} \times \text{height}$ to find the area of the triangle.



Note: The figure is not drawn to scale.

A $19\frac{1}{2}$ cm^2

B 39 cm^2

C 78 cm^2

D 156 cm^2

Reporting Category: **7 Geometry**

Performance Indicator: **8.3.spi.1 Classify types of two- and three-dimensional geometric figures using their defining properties.**

12 Which figure has no faces?

F cube

G sphere

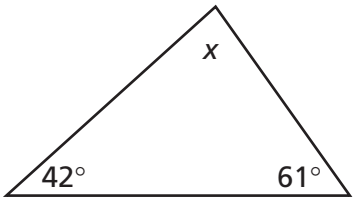
H pyramid

J cylinder

Reporting Category: **7 Geometry**

Performance Indicator: **8.3.spi.5 Determine the measure of an angle of a triangle given the measures of the other two angles.**

13



Note: The figure is not drawn to scale.

What is the measure of angle *x* ?

A 77°
B 97°
C 103°
D 257°

Science

Reporting Category: **1 Living Things and Their Environments**

Performance Indicator: **8.2.spi.2 Identify the Earth's major biomes.**

1 Which biome is characterized by dense plant growth in a moist, low-light environment?

A wetland
B tundra
C rain forest
D desert

Reporting Category: **1 Living Things and Their Environments**

Performance Indicator: **8.2.spi.3 Choose the appropriate biome for an organism, given a description.**

2 An organism breathes through gills during one phase of its development and through lungs as an adult. In which of these biomes does the organism most likely live?

F taiga
G desert
H tundra
J wetland

Reporting Category: **2 Heredity and Reproduction**

Performance Indicator: **8.4.spi.1 Differentiate between complete and incomplete metamorphosis.**

3 Which of these lists the correct sequence of the stages of incomplete metamorphosis?

A egg → pupa → larvae → adult
B nymph → egg → adult
C egg → nymph → adult
D pupa → larvae → egg → adult

Reporting Category: **2 Heredity and Reproduction**

Performance Indicator: **8.4.spi.4 Predict the genotypes of offspring in a monohybrid cross using a Punnett Square.**

4 A cross between a red flowered plant (RR) and a white flowered plant (rr) is shown in the Punnett Square below.

	r	r
R	Rr	Rr
R	Rr	Rr

Which of these best describes the genotype of the offspring from this cross?

F homozygous dominant
G homozygous recessive
H heterozygous dominant
J heterozygous recessive

Reporting Category: **3 Diversity and Adaptation**

Performance Indicator: **8.5.spi.1 Identify similarities and differences among organisms.**

5 Which of these characteristics is true of angiosperms?

A produce seeds in fruit
B produce seeds in cones
C do not produce flowers
D do not produce leaves

Reporting Category: **3 Diversity and Adaptation**

Performance Indicator: **8.5.spi.3 Infer the relatedness of different organisms.**

6 The classification of four organisms is shown in the chart below.

Classification of Four Organisms

	Organism			
	1	**2**	**3**	**4**
Phylum	Chordata	Chordata	Chordata	Chordata
Class	Mammalia	Mammalia	Mammalia	Mammalia
Order	Lagomorpha	Lagomorpha	Lagomorpha	Lagomorpha
Family	Leporidae	Leporidae	Leporidae	Leporidae
Genus	*Lepus*	*Sylvilagus*	*Pedetes*	*Lepus*
Species	*articus*	*floridanus*	*capensis*	*townsendii*

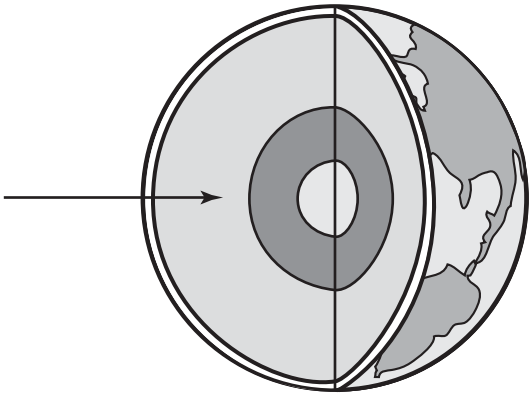
Which two species are the most closely related?

F Organisms 1 and 2
G Organisms 1 and 4
H Organisms 2 and 3
J Organisms 3 and 4

Reporting Category: **4 Earth Features**

Performance Indicator: **8.9.spi.1 Label a cross section of the Earth.**

7 A cross-section of Earth is shown below.



The arrow is pointing to the

A crust
B mantle
C outer core
D inner core

Reporting Category: **4 Earth Features**

Performance Indicator: **8.9.spi.4 Deduce plate movements as the major cause of geological events.**

8 Frequent volcanic eruptions occur in an area of the Pacific Ocean called the Ring of Fire.

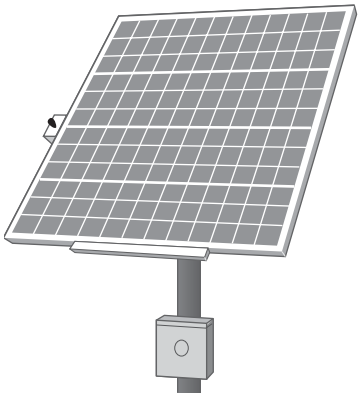
Which of these leads to areas of frequent volcanic eruptions?

F Earth rotating on its axis
G the formation of canyons
H the movement of tectonic plates
J a rise in ocean surface temperature

Reporting Category: **5 Earth Resources**

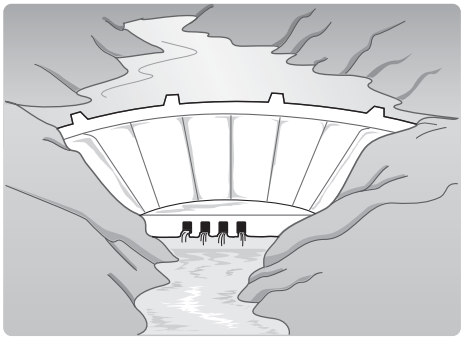
Performance Indicator: **8.10.spi.3 Identify various energy sources.**

9 Which of these devices is used to capture wind energy?



A

C



B

D

Reporting Category: **5 Earth Resources**

Performance Indicator: **8.10.spi.5 Infer that human activities may be helpful or harmful to the environment.**

10 Which of these is a reason for using coal as an energy source?

F It is inexpensive.
G It is found everywhere.
H It is a renewable resource.
J It does not cause pollution.

Reporting Category: **6 Forces and Motion**

Performance Indicator: **8.11.spi.2 Identify simple machines.**

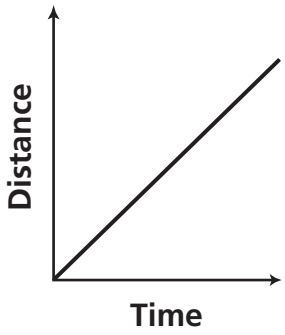
11 A screwdriver used to tighten a bolt on a bicycle is an example of which of these simple machines?

A lever
B pulley
C inclined plane
D wheel and axle

Reporting Category: 6 Forces and Motion

Performance Indicator: 8.11.spi.7 Solve problems pertaining to distance, speed, velocity, and time, given illustrations, diagrams, graphs, or scenarios.

12 Study the graph below.



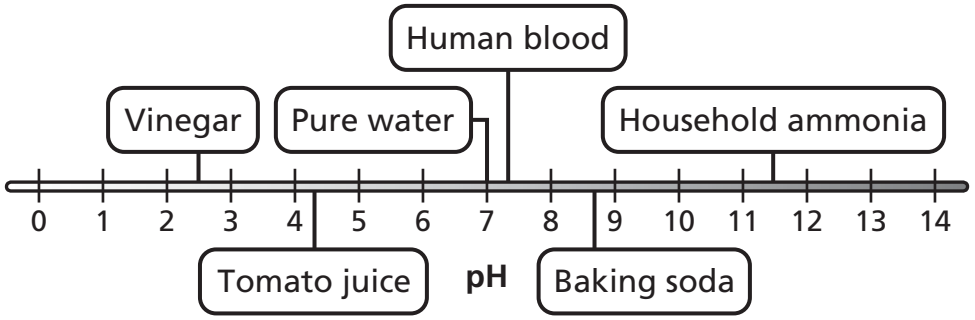
The graph shows an object that is

F not moving
G accelerating at a fixed rate
H moving at a constant speed
J decelerating at a fixed rate

Reporting Category: **7 Interactions of Matter**

Performance Indicator: **8.13.2 Identify a substance as an acid or a base, given its pH.**

13 The pH of several substances is shown on the pH scale below.



Which of these substances is more acidic than pure water and less acidic than vinegar?

A baking soda
B human blood
C household ammonia
D tomato juice

Reporting Category: **7 Interactions of Matter**

Performance Indicator: **8.13.spi.4 Determine how temperature and concentration might affect the rate of a chemical reaction.**

14 Which of these will usually increase the rate of a chemical reaction?

F reducing the light
G increasing the temperature
H reducing the pressure
J increasing the particle size

Social Studies

Reporting Category: **1 Economics**

Performance Indicator: **8.2.spi.1 Recognize America's natural resources (i.e., land, timber, fish, animal pelts, peppers, sweet potatoes, squash, pumpkins, turkeys, peanuts, potatoes, tomatoes, tobacco, cacao, beans, and vanilla).**

1 This resource was growing naturally in what is now the United States when Europeans first explored North America. What is it?

A olives
B squash
C oranges
D cinnamon

Reporting Category: **1 Economics**

Performance Indicator: **8.2.spi.5 Identify various forms of taxation (i.e., tariffs, sales tax, excise tax).**

Some Excise Taxes

1791	tax on whiskey
1813	tax on carriages, sugar refining, and distilled spirits
1862	tax on manufactured goods

2 Based on the information shown above, an excise tax is best described as a tax on

F the profits made by businesses
G goods imported from other nations
H the sale or use of specific products
J property given by one person to another person

Reporting Category: **2 Governance and Civics**

Performance Indicator: **8.4.spi.2 Identify the purposes and structures of various systems of governance (i.e., Federalism, Confederation, Republic, Democracy, Executive, Legislative, Judicial).**

3 Which of these are members of the executive branch of the United States government?

A Senate and House of Representatives
B Vice-President and the Presidential Cabinet
C Democratic and Republican Party chairpersons
D Supreme Court and United States District Courts

Reporting Category: **2 Governance and Civics**

Performance Indicator: **8.4.spi.6 Recognize the rights guaranteed in the Bill of Rights.**

> The right of people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated. . . .
>
> —Fourth Amendment

4 Based on the information shown above, the Fourth Amendment protects a person's right to

F live in privacy
G join organizations
H express an opinion
J serve in government

Reporting Category: **3 Geography**

Performance Indicator: **8.3.spi.2 Identify and use the key geographic elements on maps (i.e., island, flood plain, swamp, delta, marsh, harbor, cape, sea level, bay, prairie, desert, oasis, mesa, mountain, valley, glacier, canyon, cliff, plateau).**

> Level land that is formed when a river overflows and leaves layers of sediment

5 Which geographical feature is described above?

A prairie
B harbor
C swamp
D flood plain

Reporting Category: **3 Geography**

Performance Indicator: **8.3.spi.3 Interpret examples which illustrate how cultures adapt to or change the environment (i.e., deforestation, subsistence farming, cash crop, dam and road building).**

6 Which of these has had the greatest impact on deforestation in the United States?

F water pollution
G changes in the climate
H the construction of highways
J the use of land for agriculture

Reporting Category: **4 U.S. History Period 1 (Beginnings–1820)**

Performance Indicator: **8.5.spi.4 Recognize causes and consequences of conflict (i.e., French and Indian, Revolutionary War, War of 1812).**

7 Which of these was a result of the War of 1812 ?

A the end of slavery in some states and territories

B the removal of European nations from North America

C the expansion of additional states from the Atlantic to Pacific Oceans

D the confidence of the United States that it could defend itself from foreign threats

Reporting Category: **4 U.S. History Period 1 (Beginnings–1820)**

Performance Indicator: **8.5.spi.6 Classify the characteristics of major historic events into causes and effects (i.e., exploration, colonization, revolution, expansion, and Civil War).**

8 Which of these factors contributed most to the exploration of North America by European nations?

F lack of other territories to explore

G improved navigational technologies

H drought and other natural disasters in European nations

J reports about the Americas from Native Americans visiting Europe

Reporting Category: **5 U.S. History Period 2 (1801–1900)**

Performance Indicator: **8.5.spi.3 Differentiate between a primary and secondary source.**

Some Civil War Resources

- notes from a meeting of military leaders
- sketches of battles drawn by soldiers
- speeches by President Abraham Lincoln

9 The resources listed in the box are best described as

A media reports
B government publications
C primary source documents
D secondary source documents

Reporting Category: **5 U.S. History Period 2 (1801–1900)**

Performance Indicator: **8.5.spi.11 Identify conclusions about historical events using primary and secondary sources.**

> . . . [It is] our manifest destiny to over spread and to possess the whole of the continent . . . for the development of the great experiment of liberty. . . . It is a right such as that of the tree to the space of air and the earth. . . .
>
> —John L. O'Sullivan, 1845

10 The quotation above illustrates the United States' policy regarding

F immigration restrictions
G acquisition of new territories
H political separation from Great Britain
J plans by Southern states to secede from the Union

Answer Key

Reading and Language Arts

1	C
2	G
3	B
4	H
5	B
6	H
7	B

Mathematics

1	A
2	J
3	A
4	H
5	D
6	G
7	A
8	J
9	B
10	G
11	B
12	G
13	A

Science

1	C
2	J
3	C
4	H
5	A
6	G
7	B
8	H
9	C
10	F
11	D
12	H
13	D
14	G

Social Studies

1	B
2	H
3	B
4	F
5	D
6	J
7	D
8	G
9	C
10	G